

Centre for
Resource Studies

Queen's University
Kingston, Ontario

**Centre for
Resource Studies**

Annual Report

1983-84

Centre for
Resource Studies

Queen's University
Kingston, Ontario

**Annual Report
for the Period
1 May 1983 –
30 April 1984**

Centre for Resource Studies

Origins and Objectives

The Centre is a cooperative research institute established at Queen's University in 1973. Funded by The Mining Association of Canada and the federal Department of Energy, Mines and Resources, and co-sponsored by Queen's University, its function is to improve understanding of the complex questions underlying issues of mineral resource policy (excluding oil and gas). The purposes of the Centre are accomplished through a program of research and publication, and by providing opportunities for liaison between representatives of federal and provincial governments, the industry, labour, universities and other interested groups.

Summary of Activities 1975-84

In 1975, a multi-disciplinary research program was launched on the national impact of mining, to study the effects of the mining industry on the economy and on other aspects of Canadian society. This program was completed in 1978. Late in 1976 a second major research thrust was undertaken, with the objective of examining the mineral-related policies and programs of the federal and provincial jurisdictions in Canada. Studies arising from both programs have been published as monographs and working papers, the first appearing in 1976. As of April 1984, fourteen monographs and twenty-nine working papers have been published on these and other topics. In 1981 a new series of publications entitled Technical Papers was introduced, and the third in this series was published during 1983/84. In addition, seventeen issues of *CRS Perspectives* have been distributed to our mailing list which now has approximately 4,000 names.

Over the current year, CRS staff and associates began seven new projects and continued work in other areas. Outside researchers initiated three new studies and continued with two from previous years.

In 1977 the Centre held the first of a series of CRS Policy Discussion Seminars. Each seminar brings together, in a constructive working environment, invited representatives of a diversity of interests to discuss a topic of current policy concern. Each gives rise to a set of proceedings which contains the text of papers presented at the seminar, as well as a digest of discussions. Thirteen seminars have been held up to April 1984.

The Centre has continued its activities in contract research, carrying out projects for the federal and provincial governments. Native Participation in Mineral Development was the topic of a conference organized by the Centre for Resource Studies and funded by several federal government agencies. Research under an Indian Affairs and Northern Development contract, entitled Economic Assessment of Mineral Supply Potential North of 60°, was completed in March 1984.

Further details of CRS activities may be found in later sections of this report. The Interim Executive Director and Board of Directors wish to acknowledge the contribution of CRS staff, associates, and committee members. Without their strenuous efforts and generous allocation of time, the accomplishments of the past year would not have been possible. Thanks are also extended to R.J. Hand, who retired as Chairman of the Board in 1984, for his guidance and assistance over many years.

1983-84 Activities of the Centre

Two major issues of current concern received a considerable amount of research attention during the year: productivity, and international competitive position.

A number of the Centre's research projects through the year continued with the task of long-term data collection and analysis aimed at improving the understanding of productivity and other trends in the Canadian mineral industry. In this regard, Brian Mackenzie continued with expansion and refinements to his data base on base metal deposits, with his work on mineral endowment north of 60°, and in his work on exploration productivity in Canada and Australia. A study of size, grade, and value characteristics of Canadian base metal deposits was conducted by Duc Le under Professor Mackenzie's supervision.

Productivity was the subject of the 13th CRS Policy Discussion seminar, held in March 1984, where participants examined several recently publicized instances of productivity improvements in mining, and considered some of the problems of productivity measurements. Professor Green's study of productivity in Ontario gold mines was also completed during the year.

The competitive position of Canada in international mineral markets received attention in Peter Glenshaw's study of subsidization of mining in six developing countries relative to Canada. Stephen Salaff looked at the potential for markets for Canadian uranium in the Pacific Rim area. Professor Mackenzie's studies of exploration efficiency in Canada and of the impact of changes in inflation and exchange rates on the competitive position of Canadian mineral commodities were also in progress through the year.

Two new projects initiated on the competitive position issue are David Haglund's study of the implications of U.S. mineral policy for Canadian mineral markets, and David Anderson's study on the international competitiveness of Canadian and Australian coal in the Pacific Rim market.

Environmental and social issues were an important aspect of the year's work as well. The study of Inco and Ontario acid rain policies was successfully defended as a Ph.D. thesis by its author, Gail Wood, and will be published in 1985. The 12th CRS Policy Discussion Seminar held in September 1983 focused on the problems of planning new mining communities, and on the problems now being faced by many existing mining communities. In March 1984, the Centre organized a national con-

ference on Native Participation in Mining, which was designed to inform Native people of the nature of the mineral industry and the opportunities it offers for economic participation. The final report of the Eastern Arctic Study was completed and ready for publication by the end of the year.

Further understanding of the mineral policy process and of the role of the mineral industry in that process has been provided by the work of David Yudelman, while the Mineral Policy Update series by Margot Wojciechowski recounts actual initiatives resulting from the policy process. The study completed by Professor Doern of Carleton University investigates the origins of a number of provincial Crown corporations engaged in mineral activities, and looks as well at the evolution of federal policies with respect to the mineral industry. The foundations of mineral policy were discussed by Margot Wojciechowski in an article prepared for the *CIM Bulletin* (September 1983). The paper dealt with the need for developing a policy framework which would help to create a favourable environment for the mining industry in Canada, while at the same time strengthening the overall economy.

In addition to this program of formal research and seminars, CRS also provides ongoing advice and commentary through its newsletter, *CRS Perspectives*, and through consultation, presentations, and the media.

Research Completed since May 1983

Prospects for Canadian Uranium: Stephen Salaff, Toronto, independent researcher. Dr. Salaff studied the policy implications and options for Canadian uranium producers and governments arising from evolving commercial arrangements in the Pacific Basin. The general research objective was: i) to improve understanding of the trans-Pacific aspects of commercial arrangements for the mining, processing and marketing of uranium in North America, Australia and elsewhere around the Pacific Rim; and ii) to explore ways in which the remarkable degree of resource interdependence between Canada and its Pacific Basin partners may be better incorporated into policy measures. Several papers arising out of this grant-in-aid of research have been published in trade journals by this author, as well as a CRS working paper.

Mineral Policy Update 1982: Margot Wojciechowski and Cydney McMurray, Centre for Resource Studies. This report presents a catalogue of annual mineral policy and program changes and highlights in Canada. Innovations and policy changes, rather than ongoing programs, are emphasized and areas of concern are identified. Jurisdictions covered include the federal government, the Territories, and all provinces except Prince Edward Island. There is a common base of information for all jurisdictions, covering topics such as budget changes and new legislation. In addition, specific events and policy directions are considered within each jurisdiction.

Productivity of Gold Mining in Ontario: Alan Green, Department of Economics, Queen's University. This study draws on the data series prepared by the author and published by the Province of Ontario, to evaluate productivity changes in the gold mining sector. Efficiency trends in the sector are estimated and the factors influencing changes in the level of industry performance are analyzed. Price is found to be a major influence, as rising prices beginning in the 1970s led to expansions and major development programs, shifting resources and material inputs away from direct production.

Origins of Public Corporations in the Canadian Mineral Industry: Michael Prince and Bruce Doern, School of Public Administration, Carleton University. This study investigates the origins of Crown corporations and other public ventures in the Canadian mineral industry, and looks at the federal policy statements and case studies from three provinces, British Columbia, Saskatchewan, and Nova Scotia. Two final manuscripts have been received, one looking at federal policies, and one dealing with the provincial cases.

Subsidization in the Mining Industry: a Comparison of Canada and Six Developing Countries: Peter Glenshaw, Consultant. This study identifies a broad range of types of subsidization, and looks into the degree of government assistance in six developing countries with advanced mining industries, relative to the situation in Canada. The six countries are Chile, Indonesia, Peru, Philippines, Zaire and Zambia. The study assembles the relevant facts from many sources inside and outside the countries concerned, as a basis for analyzing important differences between Canada and the developing countries. The final manuscript has been received and is in the review process.

Base Metal Potential North of 60: Economic Viability, Endowment Quality, Competitive Position: Brian Mackenzie, Centre for Resource Studies, Michel Bilodeau, Department of Mining and Metallurgical Engineering, McGill University; and Leo Verleun, Graduate Student, Department of Geological Sciences, Queen's University. This study was prepared under contract to Indian Affairs and Northern Development Canada. The objective of the work was to examine the cost, risk and return characteristics of base metal supply north of 60°, in order to: develop a general awareness of the economic viability, endowment quality, and competitive position of base metal potential in the Canadian north; furnish a factual basis for assessing the direct effects of government mineral policies; and provide on-going support for mineral policy formulation and analysis within Indian Affairs and Northern Development. The final report was submitted in March 1984.

Research in Progress

Foreign Direct Investment by the Canadian Nonferrous Metal Industry: Elizabeth Urquhart, Independent Researcher. This is a systematic study of direct investments made abroad by Canadian nonferrous mining companies. It will include both stocks and flows of all foreign direct investments related to mining, such as exploration, mining, refining, processing and marketing, as well as investments in other sectors such as manufacturing. Case studies of the foreign investment activities of some of the major firms may also be included.

The Politics of Environmental Regulation: The Case of Acid Rain in Ontario: Edwin Black and Gail Wood, Department of Political Studies, Queen's University. This study looks at the present extent of environmental regulation of acid rain by the Government of Ontario. It will provide a more complete understanding of the phenomenon of 'acid rain', of attitudes toward its regulation, and of the present extent of its regulation, along with an explanation of the current policy situation and the limits of change.

Industry Response to the Mineral Policy Discussion Paper: David Yudelman, Centre for Resource Studies. This study examines EMR's *Mineral Policy: A Discussion Paper* and the mining industry's reaction to it. The objective is to provide a study of use both to those concerned primarily with Canadian mining and to those interested in Canadian policy formulation.

Taxation of Northern Employee Benefits: Brian Mackenzie and Margot Wojciechowski, Centre for Resource Studies. This study identifies the non-salary benefits that have been taxable but untaxed, and the efforts of National Revenue and the Department of Finance to deal with the two competing goals of equality in taxation and encouragement of northern development. It will draw on the updated data base prepared by Dr. Mackenzie for the Northern Mineral Policy Study being conducted by Indian Affairs and Northern Development Canada.

The Impact of Division of the NWT on Mineral Development: Margot Wojciechowski, Centre for Resource Studies. Drawing on the findings of the Eastern Arctic Study and related research, this study will look at present and potential mineral developments that will be located in a new eastern territory, some of the unique characteristics of the proposed new territory, and the likely political and regulatory regime.

Mineral Policy Update 1983: Margot Wojciechowski, Centre for Resource Studies. The third in this annual series, this study will document the mineral policy and program changes that have been made during 1983 by the federal government, the Territories, and all provinces except Prince Edward Island. A draft has been circulated for comments.

Size and Grade Characteristics of Base Metal Deposits in Canada: Duc Le, former graduate student, Department of Geological Sciences, Queen's University, and Brian Mackenzie, Centre for Resource Studies. This study examines the tonnage and gross in-situ value per tonne characteristics of base metal deposits, utilizing data for 275 deposits discovered in Canada to 1977. The actual distributions of these endowment characteristics, their relationship to the lognormal statistical model, and the relationship between deposit size and grade are analyzed for various types of base metal deposit. Illustrations are provided of how the results can be applied to government policy and corporate planning considerations. A summary paper was presented at the CIM annual meeting in April 1984. The study is being prepared for publication as a technical paper.

Economic Comparisons of Base Metal Exploration in Australia and Canada: Brian Mackenzie, Centre for Resource Studies, and Roy Woodall, Western Mining Corporation. This study compares the economics of base metal exploration in Australia during the period 1955-78 with similar assessments made in Canada for the 1946-77 period. The comparison is based on documented historical experience, evaluated in the context of current economic outlook conditions. Mineral exploration economics is measured by the relationship between real exploration expenditures, and the value of economic deposits discovered as the result of that exploration. A paper focusing on the productivity aspect of the topic was presented at a meeting on the economics of mineral exploration, convened by the International Institute for Applied Systems Analysis, Laxenburg, Austria, in December 1983.

Competitive Position of Canadian Minerals in International Markets: Brian Mackenzie, Centre for Resource Studies, and David Green, student, Department of Economics, Queen's University. Changes in the international competitive position of Canada's mineral industry are linked to changes in the general rate of inflation and in the exchange rates between producing and consuming nations. The study examines competitive trends for Canada's eight leading mineral exports relative to the major producing and consuming nations during the 1963-82 period.

Canadian Interests and U.S. Mineral Policy: David Haglund, Department of Political Studies, Queen's University. This study, initiated through a grant-in-aid of research, will identify what policies the United States has been, or might be, considering for the purposes of reducing its vulnerability to mineral supply disruptions, and will examine the degree to which such policies do or might affect Canadian mineral interests.

Impact of Selected Public Policies on the International Competitiveness of Canadian and Australian Coal in the Pacific Rim Market: David Anderson, Faculty of Administration, University of Regina, and (as of July 1984) Centre for Resource Studies. The objective of this study is to assess the role of selected public policies upon the international competitiveness of Alberta and British Columbia thermal and coking coal producers in the Pacific Rim market. In order to restrict the study to manageable proportions, the analysis will be restricted to Canadian and Australian domains; the specific jurisdictions subject to scrutiny will be, in addition to Alberta and British Columbia, the two major coal-producing states in Australia: New South Wales and Queensland. The public policies selected for study are those related to: ownership and export controls, taxation, transportation, and social infrastructure.

Mineral Policy in Canada: Genesis and Analysis: David Yudelman, Centre for Resource Studies. This study will look at the formulation of federal mineral policy in Canada in recent years, and examine the industry-government relationships involved in its formulation.

New Publications

The following new publications arising from the CRS research and seminar programs were released during 1983-84.

Working Paper 27, *The Prospects for Canadian Uranium*, by Stephen Salafi, was published in July 1983. This study analyzes factors affecting demand and prices of uranium. Included among these is the move toward protectionism in the USA. Salafi also examines government roles in monitoring production and creating a favorable climate for stable uranium commerce, offering suggestions about how these roles could be clarified. In particular, he calls for better understanding of the Canadian government system for uranium export contract review and approval.

Mineral Policy Update 1982, by Margot Wojciechowski and Cydney McMurray, was published in November 1983 as the second in a series. This study summarizes the major program and policy initiatives of the federal, provincial and territorial governments of Canada in 1982 that affected the Canadian mineral industry.

Working Paper No. 28, *Economic Mineral Exploration Targets*, by Brian Mackenzie, was published in January 1984. This paper was originally prepared as a contribution to a session on economic exploration targets at the annual meeting of the Prospectors and Developers Association in March 1983. The study analyzes the geological, cost, price, and taxation determinants of mineral exploration targets, drawing on Canadian exploration experience, and points out an important inefficiency in the Canadian taxation system. It also considers the overall economic justification for the mineral exploration process.

Working Paper No. 29, *Dominant Government Firms in an Oligopolistic Industry: The Case of Saskatchewan Potash*, by Frank Flatters and Nancy Olewiler, was published in January 1984. This study addresses two key issues. Is it in the interest of the Potash Corporation of Saskatchewan to use its large share of the North American market to act as a dominant producer and increase its own profits at the expense of other potash producers? Is there an incentive for the private-sector producers in Saskatchewan to join in collusion with PCS and form a partial cartel? For these purposes, the actual performance of PCS and other Saskatchewan producers over the period 1975-80 is examined.

CRS Policy Discussion Seminars

Foreign Investment Control in the Canadian Mineral Sector: Lessons from the Australian Experience, by David Anderson, was published in February 1984. This study investigates the attitudes and legislation governing foreign investment control in Canada. It also gives an in-depth look at the origins and present operations of the Australian system of control. Drawing on an evaluation of the Australian system, the author makes recommendations for changes in the Canadian system.

Financing Canadian Mining in the 1980s: Strategies for Action, edited by David Yudelman, was published in April 1984. The problems of mine financing in the developed countries have received only fragmentary attention recently compared to the work on the developing countries. This collection – which includes contributions by leading figures in the financial institutions, the mining industry, the government and academia – attempts to fill a gap in the contemporary literature by focusing on the developed countries. It also attempts to look ahead, at possible mine financing strategies for the future.

A complete list of CRS publications appears at the end of the report.

The CRS Policy Discussion Seminars are designed to bring together senior individuals from federal and provincial governments, corporations, universities, trade unions, and other interested groups to discuss current mineral policy issues. The informal atmosphere is conducive to the free and constructive exchange of views. In a typical two-day session, six or eight speakers present background information and views on the issue. Subsequent discussion in small groups and open sessions allows the participants to develop a mutual understanding of the problem and of other viewpoints, and to discuss potential solutions. The proceedings are published, including the papers and some analysis and conclusions.

Mining Communities

In September 1983, a policy discussion seminar was held on the subject of 'Mining Communities: Hard Lessons for the Future'. This subject, a follow-up of the federal-provincial Task Force on Mining Communities, was chosen because the hardships faced by mining employees and their families in single industry communities create serious long-term problems that go far beyond the simple dollars-and-cents measurements of lost work time and lost jobs. Serious attention is needed in order to minimize such hardships in the future, for the good of both the individuals who choose a career in mining and the industry itself. The following papers were presented:

Identifying the Issues, by Ian Haugh, Mines and Energy, Manitoba, and Co-chairman, Mining Communities Task Force;

The Industry Perspective, by Rod Douglas, Cominco;

The Union Perspective: Cooperation, Not Confrontation, by Ronald MacDonald, USWA Local 6500;

The Atikokan Story: Life in a Small Community that Suffers Economic Collapse, by Dennis Brown, Atikokan, Ontario;

The Government Perspective, by R.D. Glass and Joseph Lazarovich, Mining Management and Infrastructure, Indian Affairs and Northern Development Canada;

CMHC Housing Insurance in Resource Communities, by William Mulvihill, Underwriting Division, Canada Mortgage and Housing Corporation;

Alternatives to Single Project Mining Communities: A Critical Assessment, by Denis dePape, InterGroup Consultants, Winnipeg;

The Development of Mining Communities in British Columbia: Resilience Through Local Government, by Gary Paget and Brian Walisser, Municipal Affairs, British Columbia;

Canadian Resource Communities: The Residents' Perspective in the 1980s, by Richard Roberts, Praxis, A Social Planning Company, Calgary;
Study of Remote Resource-Town Planning and Development: An International Investigation, by Charles Cloutier, Human Resources, Energy, Mines and Resources Canada.

Mining Productivity

In March 1984 the 13th CRS Policy Discussion Seminar was held to discuss the subject of mining productivity. This topic was chosen because of a growing but unconfirmed belief that productivity in Canadian mines has fallen during the last decade, in spite of substantial capital investments in new machinery and equipment. The purpose of the seminar was to examine the dimensions of the productivity problem from a variety of perspectives, and to investigate measurement techniques and possible approaches to productivity improvement. The following papers were presented:

Canadian Mining Productivity and Competitive Position in International Markets, by Brian Felske, Brian Felske Associates;

Productivity Trends in the Canadian Mining Industry: 1957-79, by Kenneth Stollery, Department of Economics, University of Waterloo;

Economic Productivity of Canada's Base Metal Endowment: Is the Quality Declining?, by Brian Mackenzie, Centre for Resource Studies;

Government Initiatives Relating to Productivity Improvement, by C. George Miller, Mineral Policy Sector, Energy, Mines and Resources Canada;

Productivity Improvement by the Mining Industry, by William James, Falconbridge Limited;

Labour Perspective on Public and Private Sector Policies Needed for Productivity Improvement, by Paul LePage, United Steelworkers of America;

Inco's Research Mine, by Walter Curlook and Eric Kosatz, Inco Limited;

Possible Industry/Government Technological Initiatives, by Kenneth Whitham, Research and Technology Sector, Energy, Mines and Resources Canada;

Employee-Centered Productivity Initiatives in the Canadian Mining Industry, by Peter Richardson, School of Business, Queen's University.

The participants grappled with the difficult questions of the appropriateness of various partial and total measures of mining productivity, and the validity of findings of various productivity studies related to the Canadian mining industry. The importance of correcting the widespread misconception that ore grades are declining was noted, as was the recent but still unrecognized upturn in mining productivity for a number of important minerals. New research and communications efforts were recommended, to establish a reliable base of information for evaluating productivity trends and the economic viability of the mineral sector.

Native Participation in Mineral Development Activities

Native Participation in Mineral Development Activities was the topic of a conference also held in March 1984. It was organized by the Centre for Resource Studies, with funding from the federal Department of Energy, Mines and Resources Canada, the Department of Indian Affairs and Northern Development, and the Canada Employment and Immigration Commission. The main objective of this conference was to assist native leaders to understand the mineral industry and to explore the options for native participation in mineral development, through the regulatory process, equity participation, service contracts, and employment. It was also intended that industry and government representatives attending would gain an increased appreciation of native perspectives concerning mineral development and their aspirations for participation. The following presentations were made at the seminar:

Canada's Mineral Endowment, by Al Clark and Marc Lalonde, Energy, Mines and Resources Canada;

Native Perspectives on Mineral Development, by Katherine Graham, Centre for Resource Studies, with response from Archie Patrick, Lac Labine Band;

Economic Perspective: Decisions for Exploration, Development, Production and Closure, by Brian Mackenzie, Centre for Resource Studies;

Influence and Control Through Negotiations and the Regulatory Process, by Connie Hunt, Canadian Institute for Resource Law;

Mineral Activities on Reserve, by Jean-Luc Blais, Indian Minerals East, and John Godard, Indian Minerals West, Department of Indian Affairs and Northern Development;

Equity Participation off Reserve, by Terry Daniels, Ghost Lake Resources;

Equity Participation in Mineral Activities – off Reserve, by Franc Joubin, Consultant, Toronto;

Contract Opportunities in Resource Development, by Rosemary Karnes, Dome Petroleum;

Panel Discussion on *Employment Opportunities*, by Clarence Gitzel and Lyle Bear, Amok/Cluff Mining; Earl Laliberté, Nunasi Corporation; and Wellington Staats, Six Nations.

The conference proved to be a very constructive and informative forum for all participants. By the end of the proceedings, there was general agreement that native people, mining companies and governments need to develop a common understanding of the needs and attitudes of each group, related to mineral development, and resulting variations in action. There was also strong support for the idea that native groups and companies should try to deal directly with one another over matters of joint interest, and for the suggestion that native people would benefit from better dissemination of information related to possible mineral exploration or development activities, industry practices, and government requirements for planning and regulation related to resource developments.

Three issues of *CRS Perspectives* were published during the current year. *Perspectives* is an occasional bulletin edited by David Yudelman that contains comment about the Canadian mineral industry, reviews, and news of CRS activities and publications. *Perspectives* is sent to the entire CRS mailing list of about 4,000 individuals and institutions interested in mineral policy issues.

Various aspects of mineral policy were discussed in the three issues of *Perspectives* issued in 1983. The May issue dealt with the topic of mine finance and contained an article on 'Financing for survival' by David Yudelman. The two articles featured in the September issue of *Perspectives* were 'Mining and procurement policies' by Ed Arundell of Abitibi-Price Inc., and 'Crow benefits to mining' by Iain Wallace of Carleton University. Articles appearing in December's issue were 'Strategic minerals in Canada' by David Haglund of Queen's University and 'Scrutinizing the North' by Katherine Graham, Queen's University.

Financial Arrangements

The Centre disbursed \$108,203 on administrative activities and \$196,232 on research activities during the year.

Continuing financial support is received from The Mining Association of Canada and Energy, Mines and Resources Canada. Funding from The Mining Association of Canada was increased as of 1 October 1983, from its previous level of \$125,000 per year (\$50,000 for administration and \$75,000 for research) to \$187,500 per year (\$75,000 for administration and \$112,500 for research). This funding was matched by Energy, Mines and Resources Canada as of 1 April 1984. A total of \$28,632 was recovered from the sale of publications and seminar registration fees.

The Centre also seeks to serve the research needs of other agencies. In the current year, research support was received in the amount of \$48,335 from agencies other than the Centre's permanent sponsors.

The Board of Directors

The Board consists of sixteen members. The Executive Director and the Advisory Council Chairman are ex-officio members. Of the remainder, four are appointed by The Mining Association of Canada, three by Energy, Mines and Resources Canada, and seven by the Principal of Queen's University. The Chairman to November 1983 was Mr. R.J. Hand, Vice Principal, Resources, Queen's University, and from November has been Dr. C. George Miller, Assistant Deputy Minister, Mineral Policy, Energy, Mines and Resources Canada. The chairman of the Research Advisory Committee has observer status at Board meetings.

The Board met twice during the year. At its meeting of 5 May 1983 the Board discussed a number of ongoing and potential research themes as well as the recommendations of the Advisory Council. At the meeting of 3 November 1983, the Board discussed suggested terms of reference for the search for an Executive Director, new and continuing research projects, and progress in increasing the core funding of the Centre.

Members of the Board who retired during the year were Dr. E. Petersen, Mr. R.J. Hand, Mr. I. Bennett, Dr. W. Curlook, and Dr. J. Jeffery. New appointments for 1984/85 were Mr. G. Beausoleil (Finance), Dr. D.G. Sinclair (Queen's University), and Mr. A.S. Manson (Queen's University). Dr. Curlook (MAC) and Dr. Jeffery (EMR) were reappointed for another term.

Advisory Groups

Members of the 1983/84 Board of Directors were as follows:

I.E. Bennett
Department of Finance, Ottawa
J.W. Berry
Queen's University
R.W. Boadway
Queen's University
J.L. Bonus
The Mining Association of Canada
P. Calder
Queen's University
W. Curlook
Inco Limited
D.W. Davis (Advisory Council Chairman 1984)
Mining Consultant
H.T. Fargey
Cominco Ltd.
R.J. Hand
Queen's University
G.J. Hodge
Queen's University
W.G. Jeffery
Energy, Mines and Resources Canada
G.A. Jewett (Advisory Council Chairman 1983)
MCC Administrators Limited
R.J. Keyes (observer)
Energy, Mines and Resources Canada
B.W. Mackenzie
Centre for Resource Studies
P.C. MacCulloch
Selco Division of BP Exploration Canada Ltd.
J.L. McPherson
Placer Development Limited
C.G. Miller
Energy, Mines and Resources Canada
E. Petersen
Queen's University
R.J. Uffen
Queen's University

The Advisory Council

The Advisory Council currently has a membership of forty-nine. All researchers associated with the work of the Centre are appointed to membership for the duration of the research or a minimum of one year. Other members, representing not only governments, industry, and the professions, but also such interested groups as trade unions, consumers, and native peoples, are appointed for a three-year term. The functions of the Council are to advise the Board, primarily on the research program, and to act as advisors to the Centre's staff.

The Council's annual meeting date was moved ahead to the next fiscal year, and will be held in Kingston on 3 May 1984 under the chairmanship of Dr. Dallas Davis, in order to combine it with the meeting of the Centre's Board of Directors.

Advisory Council members for 1982-83 were as follows:

D.L. Anderson
University of Regina
*P. Andrews**
Energy, Mines and Resources Canada
W.J. Barbour
Noranda Mines Limited
*F.C. Basham**
Ministry of Energy, Mines & Petroleum Resources,
Victoria
J.C. Beal
Queen's University
M. Bilodeau
McGill University
E.R. Black
Queen's University
J.L. Bonus
The Mining Association of Canada
V. Botari
Queen's University
*K. Brewer**
Energy, Mines and Resources Canada
P. Burnett
Canadian Arctic Resources Committee
P. Caragata
Toronto-Dominion Bank

* also a member of the CRS Research Advisory Committee

R.G. Connochie
 Rio Algom Limited
 D. Davis*
 Mining Consultant, Fredericton
 G.B. Doern
 Carleton University
 A. Dorr
 Department of Industry, Commerce and Tourism,
 Quebec
 B. Felske
 Brian E. Felske & Associates
 J.M. Fleming
 Mines and Energy, St. John's
 J. Garnett
 Mines and Energy, Halifax
 P. Glenshaw
 Glenshaw Incorporated
 K. Graham
 Centre for Resource Studies
 A.C. Green
 Queen's University
 M.A. Green
 Queen's University
 D. Haglund
 Queen's University
 I. Haugh
 Energy and Mines, Winnipeg
 D. Hume
 Prospectors and Developers Association
 G.A. Jewett
 MCC Administrators Limited
 R.J. Keyes*
 Energy, Mines and Resources Canada
 J. Lazarovich
 Indian Affairs and Northern Development Canada
 B.W. Mackenzie*
 Centre for Resource Studies
 W. Marsh
 United Mine Workers of America
 D.L. Morgan*
 Placer Development Limited
 J. Nantel*
 Queen's University
 J.M. Newell
 Kidd Creek Mines Limited
 I. Nichol
 Queen's University
 E.K. O'Brien*
 Inco Limited

* also a member of the CRS Research Advisory Committee

N.D. Olewiler
 Queen's University
 B. Partridge
 Cominco Limited
 G.R. Peeling*
 Energy, Mines and Resources Canada
 P.R. Richardson
 Queen's University
 R.E. Simeon*
 Queen's University
 C.H. Smith
 Consultant, Ottawa
 E. Urquhart
 Researcher, Kingston
 E. Vallée
 United Steelworkers of America
 L. Verleun
 Queen's University
 M.J. Wojciechowski*
 Centre for Resource Studies
 D.J. Worth**
 Canadian Imperial Bank of Commerce
 D. Yudelman
 Centre for Resource Studies

* also a member of the CRS Research Advisory Committee

** Chairman of the CRS Advisory Council for 1985, and member of RAC

The Research Advisory Committee

The CRS Research Advisory Committee was formed in 1976 to advise the Board and executive director on research goals and priorities, and on the selection, formulation and direction of research projects. The Committee consists of individuals knowledgeable about the mineral industry and research methods, chosen from industry, government, private consulting, and universities. The committee decides on the allocation of grants-in-aid of research and advises on the award of research contracts. In 1981 the committee members all joined the Advisory Council of CRS as well. Under the chairmanship of Robert J. Keyes, the Committee reviewed grant applications and project proposals submitted to the Centre during 1983-84, and considered its own terms of reference and methods of operation as well. For a list of members, see the Advisory Council membership list above.

Personnel

Members of the Centre staff coordinate the program of external research, carry out studies in-house, edit and produce the Centre's publications, organize seminars and meetings, and provide staff services to the Board and Advisory Council. Other related professional activities include participation in conferences and seminars, speaking engagements and teaching, publication of professional writings, and consultation with other researchers.

During 1983-84, the staff and associates of the Centre were as follows:

Core Staff

Donna Beaubien, Publications Officer
Sandra Cantelon, Bookkeeper
Roxanne Deyo, Secretary (resigned October 1983)
Frances Harkness, Departmental Assistant (resigned August 1983)
Saley Lawton, Administrative Officer (resigned December 1983)
Marianne Leather, Departmental Assistant
Brian W. Mackenzie, Interim Executive Director
Linda Noble, Secretary
Margot Wojciechowski, Assistant Director
David Yudelman, Senior Research Associate

Faculty Associates

Peter Richardson, School of Business, Queen's University
Alan Green, Department of Economics, Queen's University
Nancy Olewiler, Department of Economics, Queen's University
Michel Bilodeau, Department of Mining and Metallurgical Engineering, McGill
Katherine Graham, Institute of Local Government, Queen's University

In addition, many others have assisted in the work of the Centre at various times. The contributions of Brian Felske, Peter Glenshaw, David Green, Duc Le, Rimas Pakalnis, Leo Verleun, Roy Woodall, and Victor Botari are gratefully acknowledged.

CRS Publications

Following is a list of CRS publications available from:

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